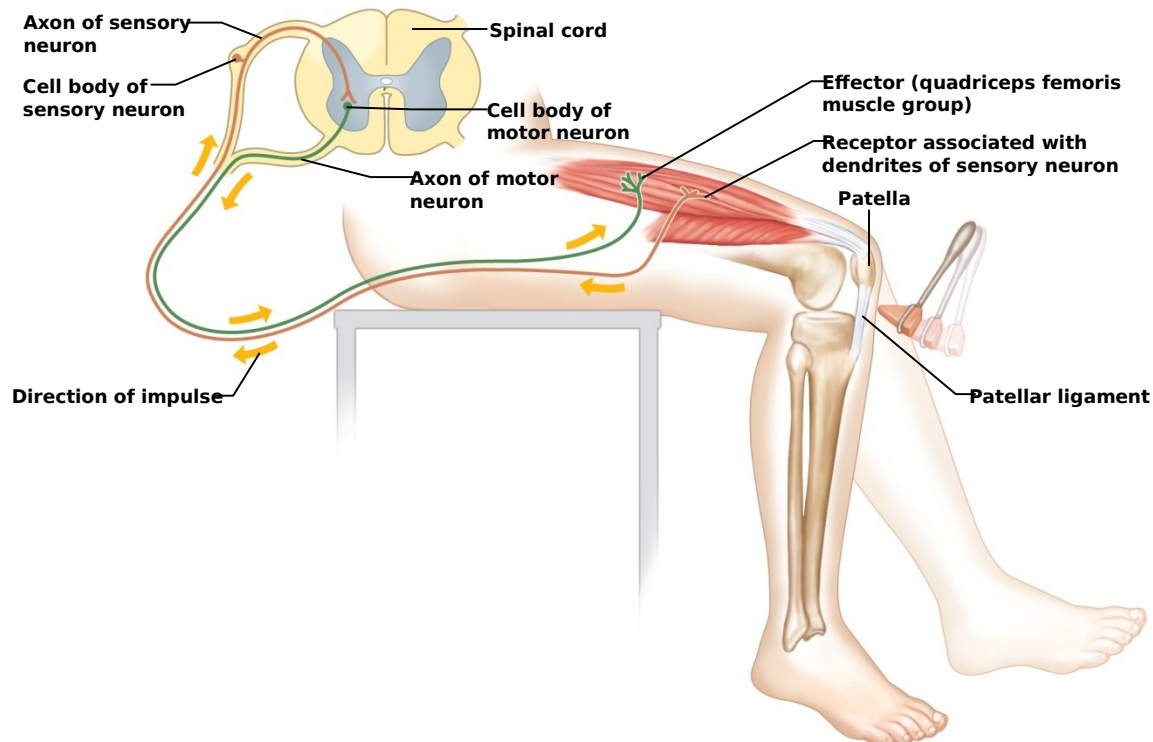


Reflex Behavior

- Example is the *knee-jerk reflex*
- Simple monosynaptic reflex
- Helps maintain an upright posture

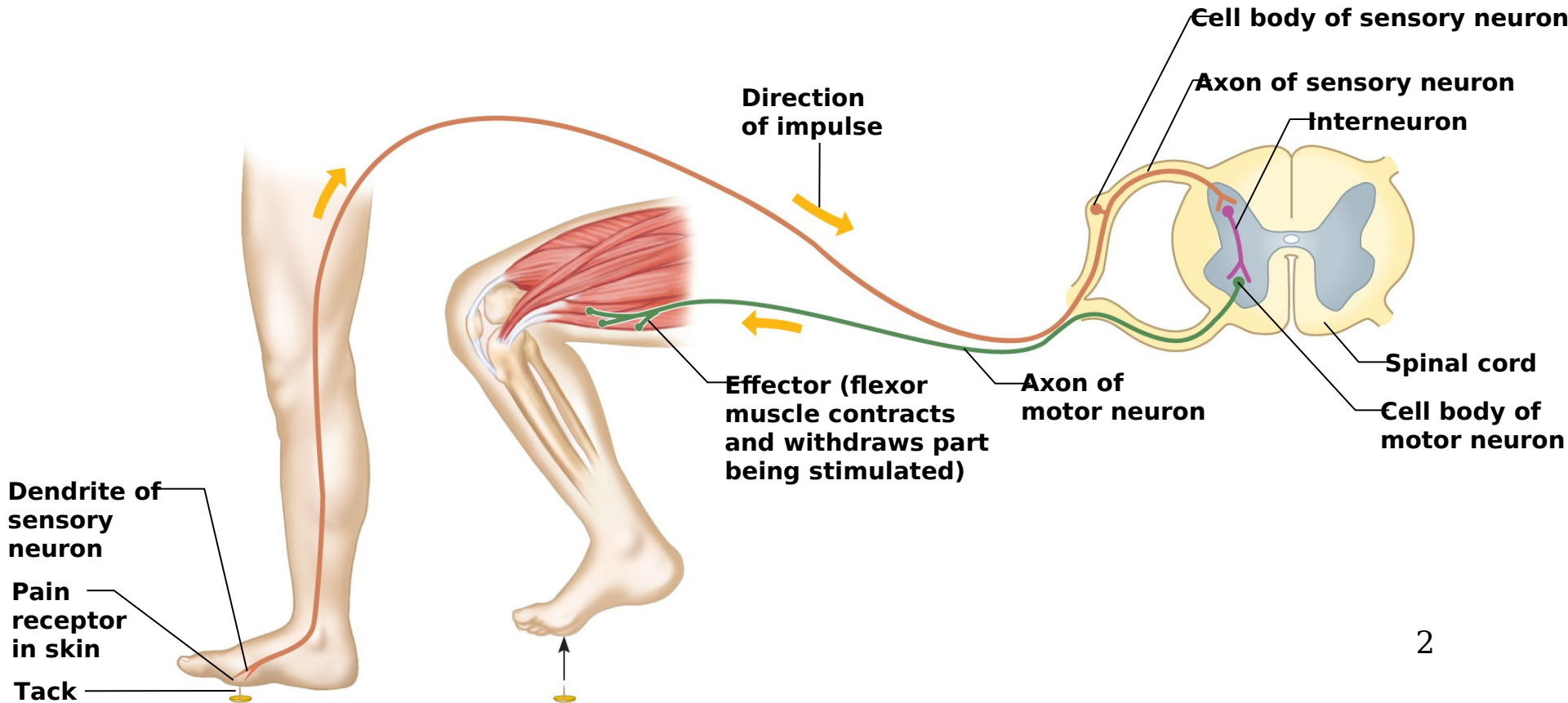
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Reflex Behavior

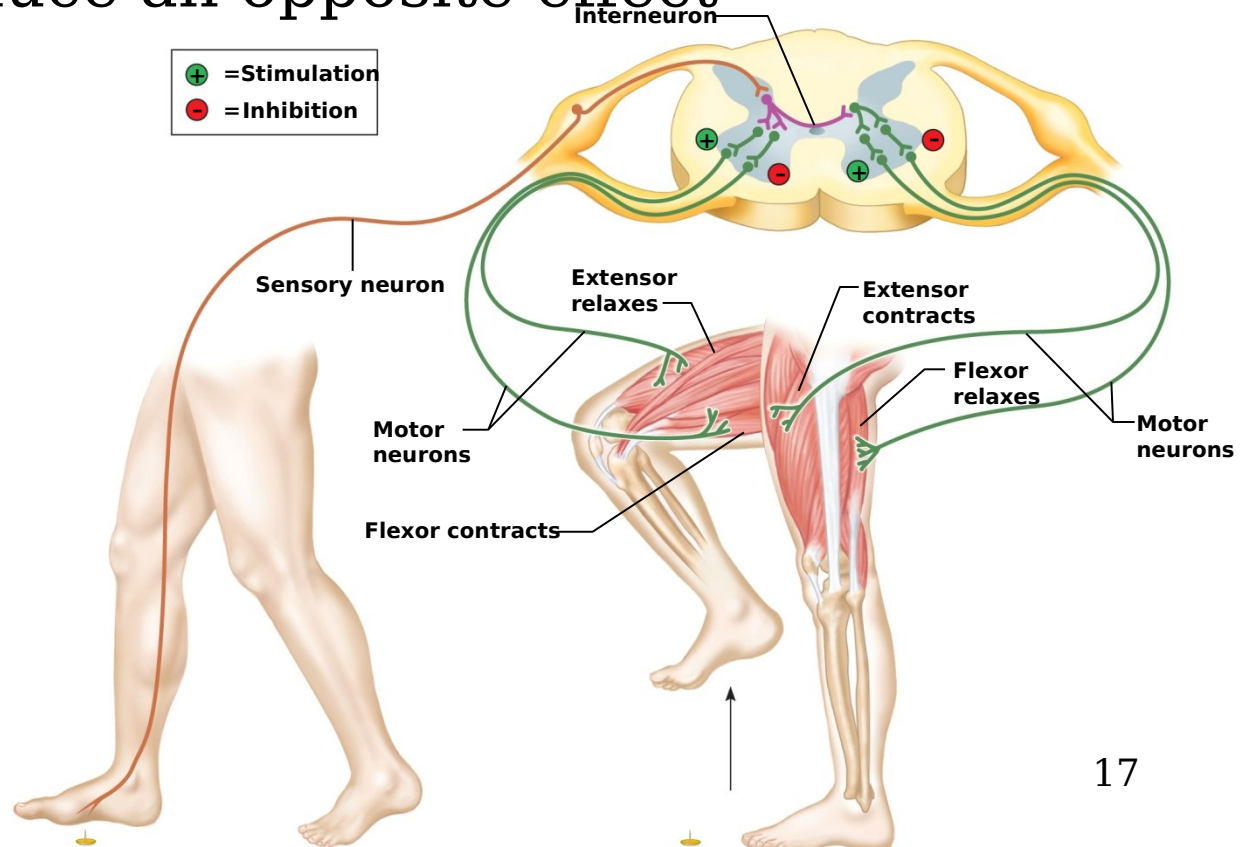
- Example is a *withdrawal reflex*
- Prevents or limits tissue damage

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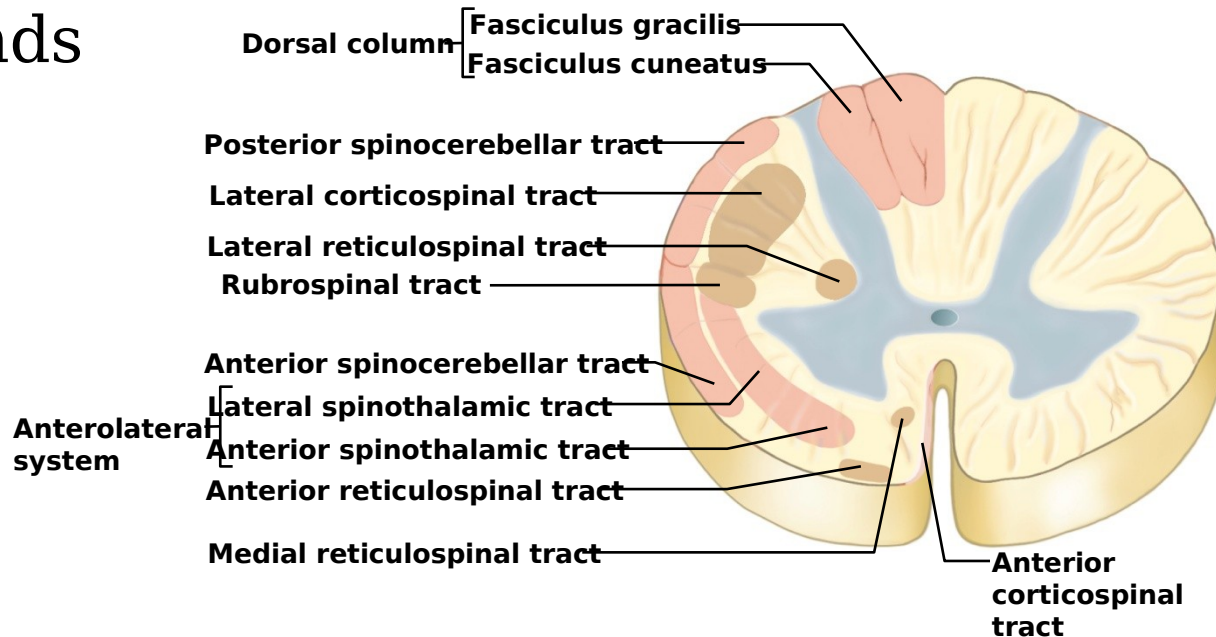
Reflex Arc

- Example *crossed extensor reflex*
- Crossing of sensory impulses within the reflex center to produce an opposite effect



Tracts of the Spinal Cord

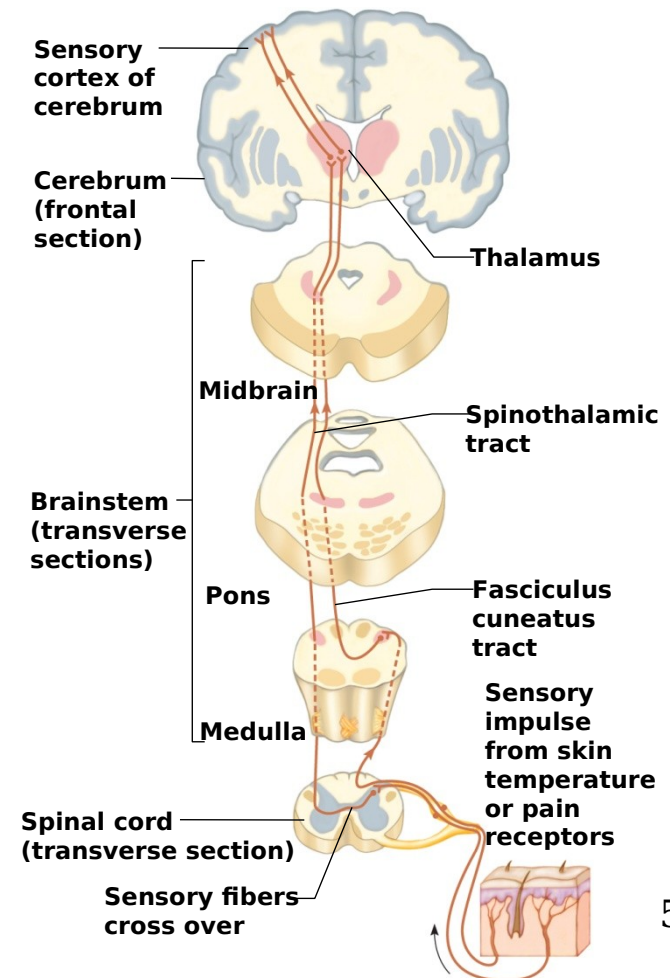
- Ascending tracts conduct sensory impulses to the brain
- Descending tracts conduct motor impulses from the brain to motor neurons reaching muscles and glands



Ascending Tracts

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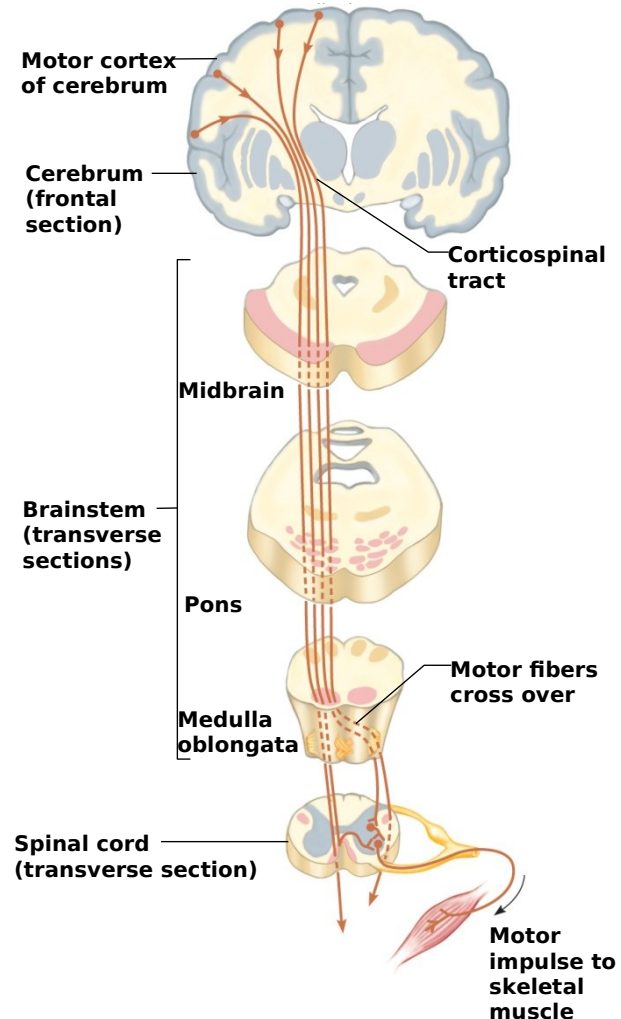
- Major ascending (sensory) spinal cord tracts:
 - Spinothalamic tracts
 - Lateral and anterior
 - Spinocerebellar tracts
 - Posterior and anterior



Descending Tracts

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- Major descending (motor) spinal cord tracts:
 - Corticospinal tracts
 - Lateral and anterior
 - Reticulospinal tracts
 - Lateral, anterior and medial



Nerve Tracts of the Spinal Cord

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TABLE 11.3 | Nerve Tracts of the Spinal Cord

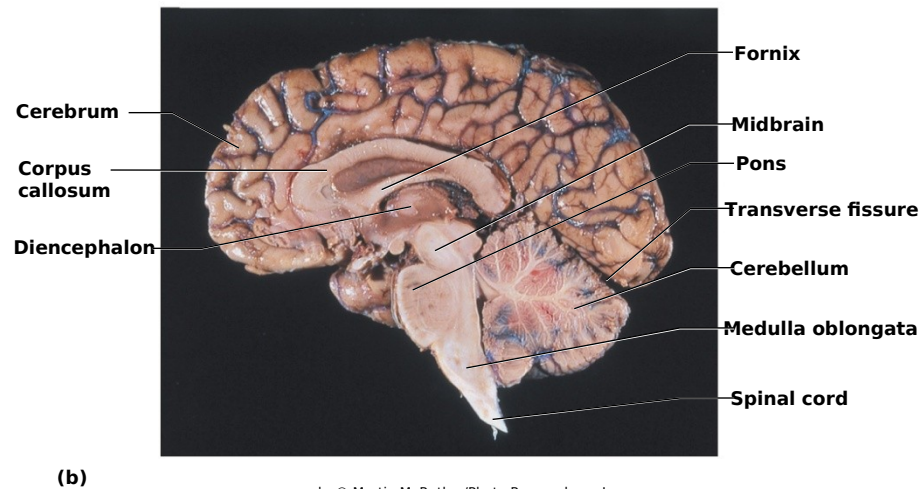
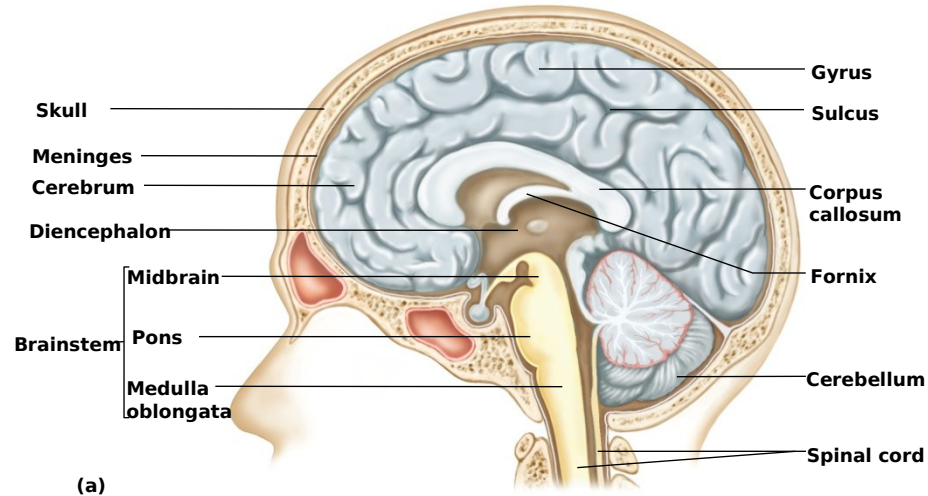
Tract	Location	Function
Ascending Tracts		
1. Fasciculus gracilis and fasciculus cuneatus	Posterior funiculi	Conduct sensory impulses associated with the senses of touch, pressure, and body movement from skin, muscles, tendons, and joints to the brain
2. Spinothalamic tracts (lateral and anterior)	Lateral and anterior funiculi	Conduct sensory impulses associated with the senses of pain, temperature, touch, and pressure from various body regions to the brain
3. Spinocerebellar tracts (posterior and anterior)	Lateral funiculi	Conduct sensory impulses required for the coordination of muscle movements from muscles of the lower limbs and trunk to the cerebellum
Descending Tracts		
1. Corticospinal tracts (lateral and anterior)	Lateral and anterior funiculi	Conduct motor impulses associated with voluntary movements from the brain to skeletal muscles
2. Reticulospinal tracts (lateral, anterior, and medial)	Lateral and anterior funiculi	Conduct motor impulses associated with the maintenance of muscle tone and the activity of sweat glands from the brain
3. Rubrospinal tracts	Lateral funiculi	Conduct motor impulses associated with muscular coordination and the maintenance of posture from the brain

11.5: Brain

- Functions of the brain:
 - Interprets sensations
 - Determines perception
 - Stores memory
 - Reasoning
 - Makes decisions
 - Coordinates muscular movements
 - Regulates visceral activities
 - Determines personality
- Major parts of the brain:
 - Cerebrum
 - Frontal lobes
 - Parietal lobes
 - Occipital lobes
 - Temporal lobes
 - Insula
 - Diencephalon
 - Cerebellum
 - Brainstem
 - Midbrain
 - Pons
 - Medulla oblongata

The Brain

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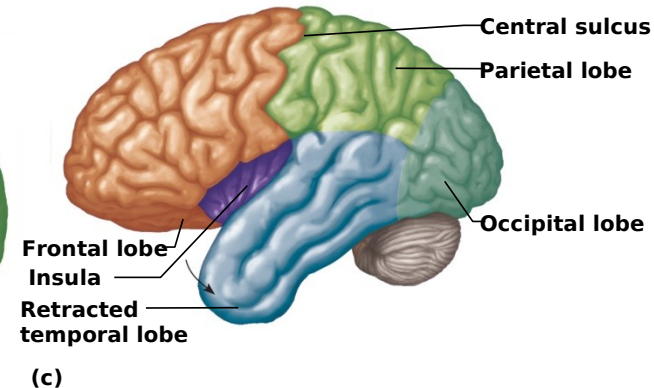
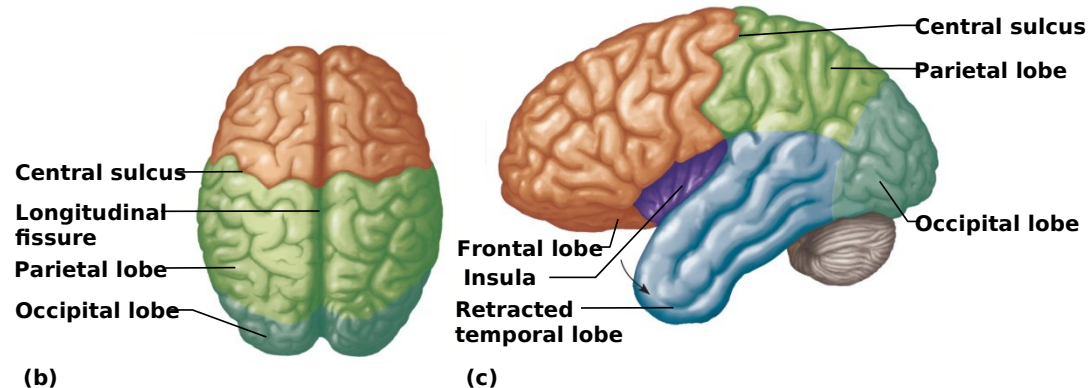
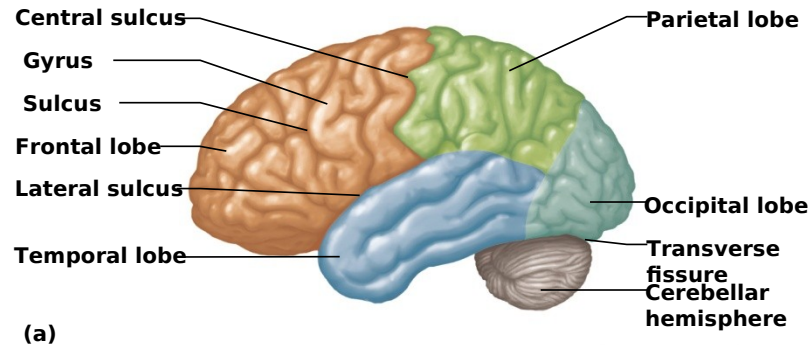


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Structure of the Cerebrum

- **Corpus callosum**
 - Connects cerebral hemispheres (a commissure)
- **Gyri**
 - Bumps or convolutions
- **Sulci**
 - Grooves in gray matter
 - Central sulcus of Rolando
- **Fissures**
 - Longitudinal: separates the cerebral

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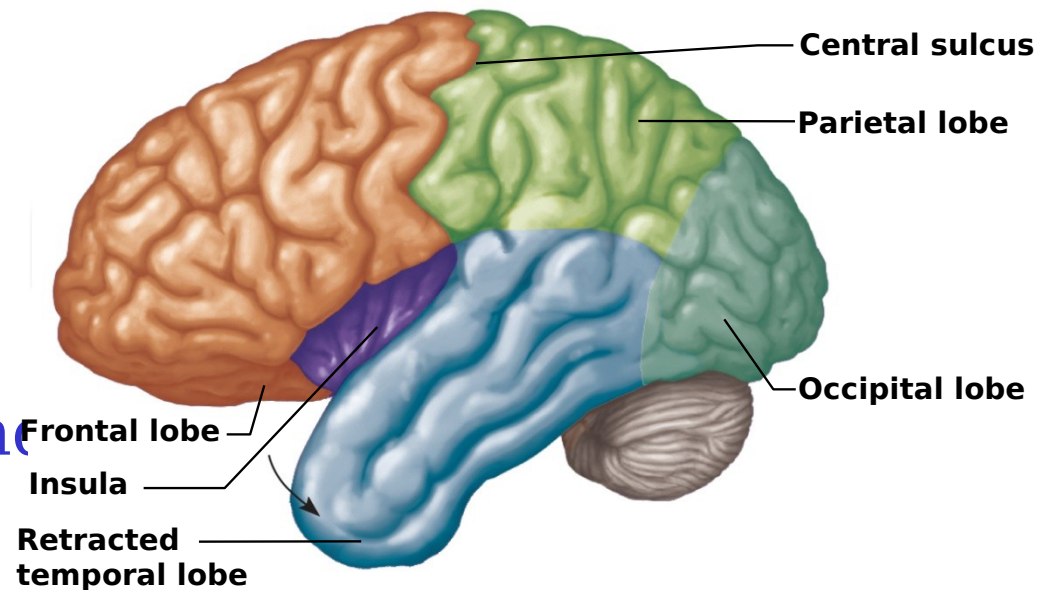


Lobes of the Cerebrum

- Five (5) lobes bilaterally:

- Frontal lobe
- Parietal lobe
- Temporal lobe
- Occipital lobe
- Insula aka 'Island of Reil'

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(c)

Functions of the Cerebrum

- Interpreting impulses
- Initiating voluntary movements
- Storing information as memory
- Retrieving stored information
- Reasoning
- Seat of intelligence and personality